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SPONGES, INDICATORS OF MARINE ENVIRONMENTAL HEALTH. *Memoirs of the Queensland Museum 44: 50. 1999:-* There is an urgent need for marine ecosystem indicators to facilitate management aimed at either ameliorating impacts or guiding sustainable utilisation of marine resources. We propose that qualitative and quantitative examination of marine benthic communities will provide robust indication of responses to short and long term environmental conditions, and further suggest that information exists which permits the creation of a hierarchy of indicators for establishing ecosystem health in a regional context. These are in the form of identifiable marine community assemblages, together with biomass and growth indices determined from morphological parameters associated with the characterising species for each assemblage. Examples are provided to demonstrate the sensitivity of such indicators by focusing on sponge characterised communities. The composition of assemblages and population statistics of key species reflect ecosystem disturbances following catastrophic sediment deposition following cyclones, and in response to more recent and relatively short-term impacts. The latter include responses to sediment disruption from trawling and sand mining, and responses to water quality change during algal bloom events.

Marine environmental indicators are likely to take the form of well-defined ecotypes described by characterising species presence. These species have known ranges of tolerance to environmental variables such as light, current, food supply, turbidity, BOD, and sediment regime. They are by their very nature, relevant at a regional level and will be set in the context of a biogeographic classification for any coast or shelf. They can be further refined by interrogation of models relating population structure of key species to biological and physical attributes of the environment. ❐ *Porifera, growth, morphology, indicators, environmental health, marine resources, benthic communities.*

C.N. Battershill (email: c.battershill@niwa.cri.nz) & R. Abraham, National Institute of Water and Atmospheric Research, P.O. Box 14-901, Kilbirnie, Wellington, New Zealand; * Present address: Australian Institute of Marine Science, PMB 3, Townsville MC, Qld., 4810, Australia; 1 June 1998.*